

LOCKWOOD CORPORATION

**Highway 92 East
Gering, NE**

**POST-CLOSURE CARE
COMPLIANCE MONITORING REPORT**

NDEQ/EPA ID # NED044101442

SUBMITTED TO:

NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

PREPARED BY:

**Sorensen Consulting, LLC.
1901 Bear Court
Fort Collins, CO 80525**

May 2, 2002

438001



RCRA RECORDS

Sorensen Consulting, LLC.

Civil/Environmental Engineering

1901 Bear Court
Fort Collins, CO 80525

Phone (970) 484-9286
Fax (970) 484-9276
Mobile (970) 217-5731
Email psorensen6@attbi.com

May 2, 2002

Mr. Ed Southwick
Nebraska Department of Environmental Quality
Suite 400, The Atrium
1200 N Street
P.O. Box 98922
Lincoln, NE 68509-8922

Subject: Lockwood Corporation
Compliance Monitoring Report, Spring, 2002
RCRA Part B Post-Closure Permit
NDEQ/EPA ID # NED044101442

Dear Mr Southwick:

On behalf of Lockwood Corporation, Sorensen Consulting, LLC. is pleased to submit three (3) copies of the referenced Compliance Monitoring Report. This report was prepared and is submitted in accordance with requirements of the Part B Post Closure Permit Application of August 10, 1994 and the RCRA Post Closure Permit issued by the Nebraska Department of Environmental Quality (NDEQ) on December 16, 1994. As required, one (1) copy of the referenced report is being sent to U.S. EPA, Region VII in Kansas City, KS.

Sorensen Consulting conducted groundwater sampling of compliance monitoring wells near the Lockwood closed waste acid impoundment on April 4, 2002. The enclosed report summarizes findings.

If you have any comments or need additional information, please contact me at (970) 484-9286.

Sincerely,



Paul C. Sorensen, P.E.
President

Enclosure

cc: James Mitchell
Ms. JoAnn M. Heiman, U.S. EPA - Region VII

RECEIVED

MAY 06 2002

ARTD/CRIB

LOCKWOOD CORPORATION

**Highway 92 East
Gering, NE**

**POST-CLOSURE CARE
COMPLIANCE MONITORING REPORT**

NDEQ/EPA ID # NED044101442

SUBMITTED TO:

NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

PREPARED BY:

**Sorensen Consulting, LLC.
1901 Bear Court
Fort Collins, CO 80525**

May 2, 2002

TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 SAMPLING PROCEDURES	1
3.0 COMPLIANCE MONITORING RESULTS	2
4.0 STATISTICAL ANALYSIS	3
5.0 CONCLUSIONS	3

LIST OF TABLES

Table 1. Monitor Well and Groundwater Sampling Information	4
Table 2. Summary of Measured Water Surface Elevations	5
Table 3. Summary of Compliance Monitoring Analytical Results	6
Table 4. Groundwater Recovery Data	7

LIST OF FIGURES

Figure 1. Groundwater Potentiometric Surface Map	8
Figure 2. Water Surface Elevation vs. Time	9

APPENDICES

APPENDIX A - Technology Laboratory, Inc. Water Analysis Report and Chain-of-Custody Documentation

1.0 INTRODUCTION

As prescribed in the RCRA Part B Post Closure Permit Application of August 10, 1994 and in the Post-Closure Permit (NDEQ/EPA I.D. #: NED044101442) issued by the Nebraska Department of Environmental Quality (NDEQ) on December 16, 1994, Sorensen Consulting, LLC conducted sampling of compliance monitoring wells near the closed waste acid impoundment on the Lockwood facility in Gering, Nebraska on April 4, 2002. On behalf of Mr. James J. Stumpf, Chapter 7 Trustee for Lockwood Corporation, we are pleased to submit this summary report of compliance monitoring procedures and analytical data.

2.0 SAMPLING PROCEDURES

Compliance monitoring was performed in accordance with procedures outlined in Section 3.0 of the RCRA Part B Post Closure Permit Application, Sampling and Analysis Plan. As required, initial (pre-sampling) groundwater elevation measurements were made, as well as a determination of total well depth. Post-sampling groundwater elevations were also measured with the use of an electronic water level indicator. In response to the NDEQ Notice of Violation (NOV) of August 8, 1994, well recovery time after purging and sampling was recorded to the nearest half minute with the continuous use of the electronic water level indicator. Corresponding data are provided in Section 3.0.

Groundwater samples were taken from the following compliance monitor wells, in the order presented: MW-8 (background), MW-6, MW-3, MW-7, MW-1, and MW-4. This sampling sequence goes from up- to down-gradient of the closed waste acid impoundment. Field measurements were recorded for pH, specific conductance, and temperature. Each monitor well was purged in excess of three times the casing volume and until consecutive readings of pH, specific conductance, and temperature varied by less than 5 %.

Groundwater samples were collected from each well and submitted to Technology Laboratory, Inc. in Fort Collins, Colorado for analysis of the following parameters:

- Volatile Organic Compounds;
- Total Cadmium;
- Total Lead; and
- Total Silver.

In accordance with NDEQ requirements, a duplicate sample was collected from MW-4 and submitted to the laboratory for metals analysis, a trip blank sample was submitted to the laboratory for metals analysis; and a duplicate sample from MW-1 was submitted for laboratory pH and specific conductivity analysis to confirm field measurements.

3.0 COMPLIANCE MONITORING RESULTS

Table 1 provides pertinent monitor well information, including: top of casing elevation; total well depth (as measured during this sampling event and as previously measured on October 14, 1994 for comparison); depth to groundwater; groundwater surface elevation; casing volume; and purge volumes prior to sampling. Top of casing elevations are as surveyed by Schaff & Associates, Inc. on October 14, 1994, and are Mean Sea Level elevations, minus 3,800 feet. These data are listed in Table 1 and also presented on Figure 1, along with the resulting groundwater potentiometric surface map as measured on April 4, 2002 and the inferred groundwater gradient and flow direction. Consistent with previous compliance monitoring findings, groundwater flow direction is to the northeast.

Groundwater elevations appear to be consistently higher in the fall than in the spring months, and measured groundwater elevations during this sampling event were typical of spring levels. Table 2 provides an account of recorded groundwater elevations measured during compliance monitoring events from October 1994 through April 2002, and Figure 2 provides a graphical display of the seasonal fluctuation in groundwater surface elevation.

The Technology Laboratory, Inc. analytical report and Chain-of-Custody documentation are presented in Appendix A. Laboratory analytical results are summarized in Table 3. As shown, analytical results for volatile organic compounds (VOCs), total cadmium, total lead, and total silver indicate that none of these compounds or elements is found in concentrations greater than the corresponding groundwater protection standard.

Review of the laboratory report (Appendix A) indicates that all of these parameters are reported at concentrations less than the detection limit for all monitor wells. The non-detect analytical results are consistent with those of previous monitoring results as reported in the Part B Post-Closure Permit Application submitted (with revisions) by Lockwood on August 10, 1994 and Post-Closure Care Compliance Monitoring Reports from November 1994 through the current monitoring event, with the following exceptions. Trichloroethene (TCE) was measured at 1.2 micrograms per Liter ($\mu\text{g}/\text{L}$) in MW-4 in the sample collected on October 16, 1997 and tetrachloroethene (PCE) was measured at 1.1 $\mu\text{g}/\text{L}$ in MW-6 in samples collected on April 2, 1998 and March 29, 2000. While these results are above the non-detectable level, they remain well below the designated Groundwater Protection Standard of 5.0 $\mu\text{g}/\text{L}$. Analytical results for all subsequent sampling events were once again reported at non-detect for all parameters analyzed.

In the NDEQ Notice of Violation (NOV) letter of August 8, 1994, NDEQ requested that Lockwood perform monthly well head inspections, annual well bore scrape sampling, and annual review of well yield, recovery time, and fill depth. Lockwood understands that these requests were made to demonstrate the proper functioning of the monitor wells. In response to that NDEQ comment, it was agreed that groundwater recovery times would be recorded to the nearest 30 seconds with the continuous use of an electronic water level indicator. Moreover, Lockwood agreed to perform the

requested well services "in the event that both of the following conditions are encountered in any given compliance monitoring well:

- Failure to produce visually clear sample water after purging of five (5) casing volumes; and
- Post-purging water surface depression below the initial water surface level in excess of 0.25 feet after a recovery period of not greater than 15 minutes (Lockwood response to NDEQ NOV, August 30, 1994)."

NDEQ agreed that very rapid groundwater recovery rates have been demonstrated during compliance monitoring events. It was therefore further agreed that recording of groundwater recovery in 30 second increments was necessary only once a year. However, for consistency from one monitoring event to the next, groundwater recovery rates in all compliance monitoring wells have been measured and reported during this and all sampling events. Table 4 presents groundwater recovery data. As demonstrated by the purge volumes necessary to produce visually clear water prior to sampling (Table 1) and by the recorded post-sampling depths to groundwater given in Table 4, neither of the above conditions was encountered, indicating acceptable conditions within each of the monitor wells. Water level measurements show consistently minimal changes in post-sampling from pre-sampling water levels, and the recorded differences are within the margin of error for the electronic water level indicator used.

4.0 STATISTICAL ANALYSIS

Analytical values for the parameters sampled from each compliance monitor well are reported as less than the detection limit for all parameters from all compliance monitoring wells. Accordingly, these data have identical mean values (all less than detection limit) and variance values of zero. The critical assumption that the variance be equal in all wells for the Analysis of Variance test is violated (variance equal to zero). Therefore, no statistical analysis (analysis of variance) is appropriate for these data.

5.0 CONCLUSIONS

This report presents findings of the April 4, 2002 compliance monitoring event at the Lockwood closed waste acid impoundment in accordance with requirements of the Part B Permit Application of August 10, 1994 and the Part B Post Closure Permit (NED044101442) issued by the NDEQ on December 16, 1994. The data show that none of the constituents of concern was detected in concentrations greater than the groundwater protection standards in any of the compliance wells sampled; all parameters evaluated are reported at concentrations less than detection limit.

Table 1
Monitor Well and Groundwater Sampling Information

Monitor Well No.	Top of Casing Elevation ¹ (ft-AMSL)	Total Well Depth Measured on 04/04/02 (ft below TOC ²)	Total Well Depth Measured on 10/14/94 (ft below TOC ²)	Depth to Groundwater Measured on 04/04/02 (ft below TOC ²)	Groundwater Elevation ¹ (ft-AMSL)	Well Casing Volume (gal)	Purge Volume prior to sampling (gal)
MW-8	81.47	29.46	29.33	10.53	70.94	12.22	40
MW-6	80.73	29.90	29.46	9.89	70.84	12.72	40
MW-3	81.00	28.32	28.55	10.37	70.63	11.67	35
MW-7	80.51	28.05	28.31	10.32	70.19	11.52	35
MW-1	80.14	24.53	24.82	9.85	70.29	9.54	30
MW-4	80.23	27.24	27.53	10.26	69.97	11.04	35

¹ Adjusted Mean Seal Level Elevation: MSL - 3,800 ft

² TOC = Top of Casing

Table 2
Summary of Measured Water Surface Elevations
During Compliance Monitoring Period October 1994 through April 2002

Monitor Well No.	Measured Groundwater Surface Elevation (AMSL) ¹															
	10/14/94	3/24/95	10/27/95	4/19/96	10/24/96	3/26/97	10/16/97	4/2/98	9/24/98	3/31/99	10/21/99	3/29/00	10/26/00	3/29/01	10/19/01	4/4/02
MW-8	72.33	71.01	71.88	70.59	72.39	70.83	72.87	71.21	73.43	71.29	72.67	71.08	73.03	71.45	73.32	70.94
MW-6	72.18	70.83	71.76	70.47	72.24	70.74	72.81	71.23	73.40	71.21	72.57	70.97	73.08	71.43	73.18	70.84
MW-3	71.94	70.68	71.51	70.28	72.09	70.52	72.38	70.90	73.19	70.97	72.53	70.76	72.92	71.26	72.97	70.63
MW-7	71.63	70.22	71.18	69.81	71.65	70.09	72.18	70.35	72.76	70.46	71.93	70.28	72.21	70.55	72.44	70.19
MW-1	71.67	70.32	71.20	69.92	71.76	70.19	72.16	70.49	72.75	70.62	72.09	70.44	72.48	70.78	72.54	70.29
MW-4	71.37	70.03	70.96	69.59	71.45	69.88	71.96	70.21	72.49	70.27	71.81	70.11	72.07	70.39	72.30	69.97

¹ Adjusted Mean Seal Level Elevation = Mean Seal Level (MSL) - 3,800 ft

Table 3
Summary of Compliance Monitoring Analytical Results

Monitor Well No.	Date Sampled	pH ¹	Specific Conductance ¹ (umhos/cm)	Temperature ¹ (°F)	VOCs ² (µg/L)	Total Cadmium (mg/L)	Total Lead (mg/L)	Total Silver (mg/L)
Groundwater Protection Standard					TCE: 5.0 PCE: 5.0	0.005	0.015	0.05
MW-8	04/04/02	6.99	1,171	53.0	<0.5	<0.005	<0.003	<0.01
MW-6	04/04/02	7.38	1,302	52.2	<0.5	<0.005	<0.003	<0.01
MW-3	04/04/02	7.34	1,248	52.4	<0.5	<0.005	<0.003	<0.01
MW-7	04/04/02	7.38	1,276	53.9	<0.5	<0.005	<0.003	<0.01
MW-1	04/04/02	6.98	2,490	51.3	<0.5	<0.005	<0.003	<0.01
MW-4	04/04/02	6.92	3,170	53.2	<0.5	<0.005	<0.003	<0.01
Trip Blank	04/04/02	NA ³	NA ³	NA ³	NA ³	<0.005	<0.003	<0.01
MW-1-d	04/04/02	6.91 ⁴	1.662 ⁵	NA ³	NA ³	NA ³	NA ³	NA ³
MW-4-d	04/04/02	NA ³	NA ³	NA ³	NA ³	<0.005	<0.003	<0.01

¹ Field Measurements

² Volatile Organic Compounds

³ Not Analyzed

⁴ Laboratory Analysis

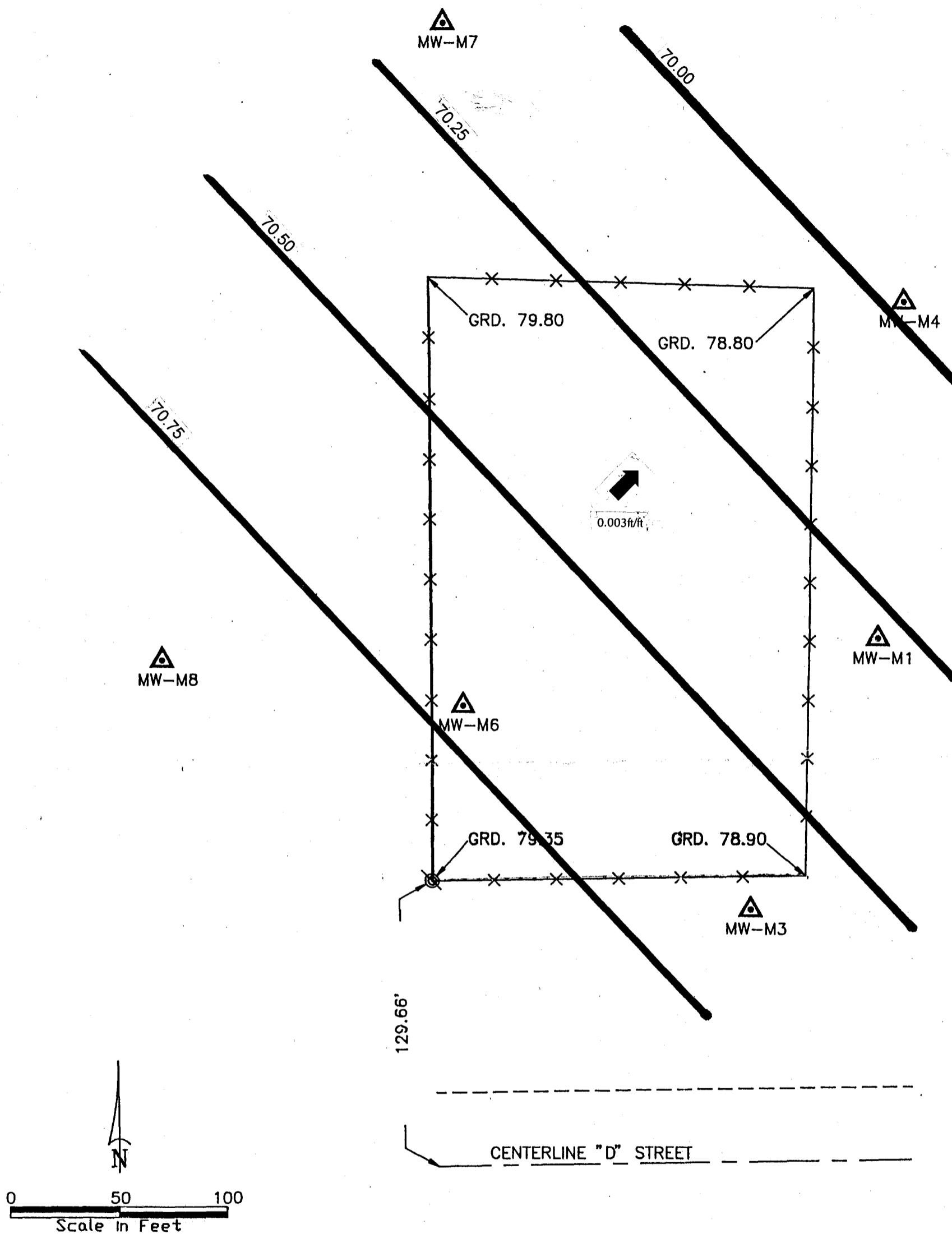
⁵ Laboratory Analysis, in units of mS/cm

Table 4
Groundwater Recovery Data¹

Monitor Well No.	Pre-Sample Water Depth (ft below TOC)	Elapsed Time² (sec)	Post-Sample Water Depth (ft below TOC)
MW-8	10.53	135	10.55
		165	10.55
		195	10.55
MW-6	9.89	315	9.92
		345	9.92
		375	9.92
		405	9.92
MW-3	10.37	90	10.46
		120	10.46
		150	10.46
		180	10.46
		210	10.46
MW-7	10.32	240	10.33
		270	10.33
		300	10.33
MW-1	9.85	180	9.85
		210	9.85
MW-4	10.26	30	10.32
		60	10.32
		90	10.31
		120	10.31
		150	10.31

¹ Data as measured on April 4, 2002

² Elapsed Time from beginning of sampling



KEY

- MONITORING WELL
- EXISTING SPIKE

WELL #	GROUND ELEVATION (FT-AMSL) ¹	TOP OF CASING ELEVATION (FT-AMSL)	DEPTH TO GROUNDWATER (FT)	GROUNDWATER ELEVATION (FT-AMSL)
MW-M1	78.40	80.14	9.85	70.29
MW-M3	79.30	81.00	10.37	70.63
MW-M4	78.72	80.23	10.26	69.97
MW-M6	79.00	80.73	9.89	70.84
MW-M7	78.90	80.51	10.32	70.19
MW-M8	79.80	81.47	10.53	70.94

1. Adjusted Mean Sea Level Elevation: MSL - 3,800 feet

FIGURE 1
GROUNDWATER POTENTIOMETRIC SURFACE
AS MEASURED ON APRIL 4, 2002
CLOSED WASTE ACID EVAPORATION POND

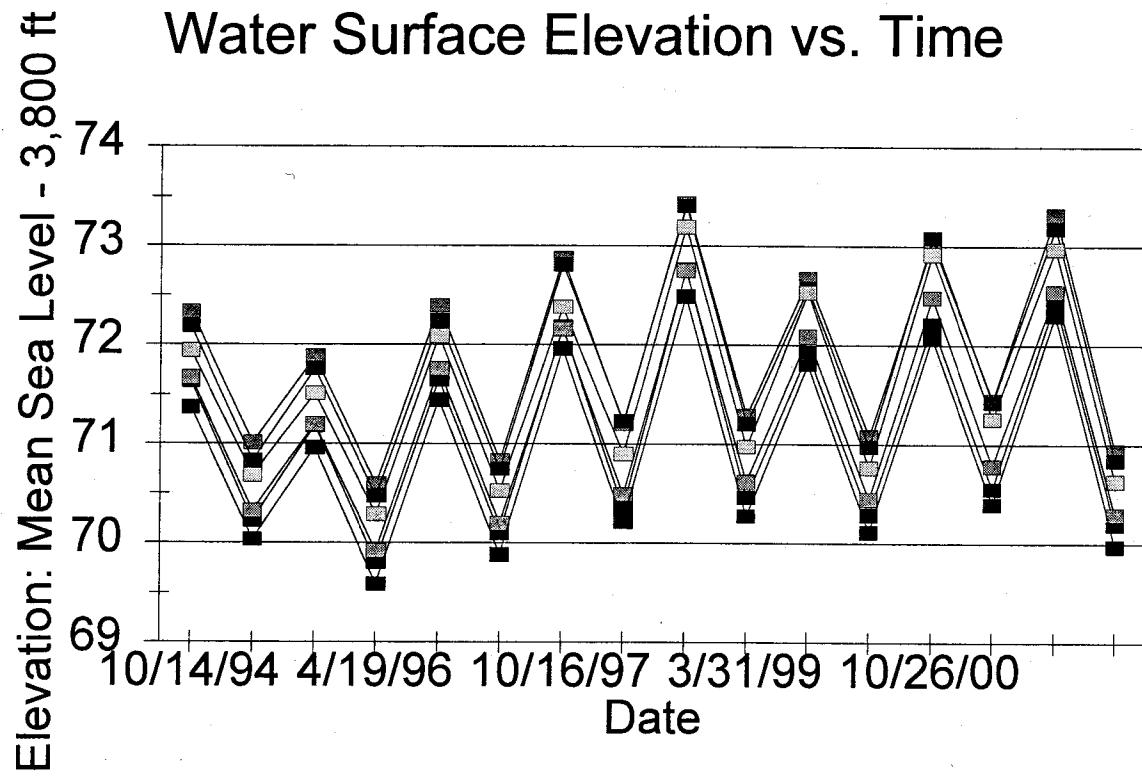
M. C. SCHAFF & ASSOCIATES, INC.
818 SOUTH BELTLINE HWY. EAST
SCOTTSBLUFF, NEBRASKA

Project: MONITORING WELL LOCATIONS
AND ELEVATIONS
LOCKWOOD CORPORATION
GERING, NEBRASKA 69341

Date: OCTOBER 20, 1994 Drn: J.H.
Job No. # Chk: K.B.
Scale: 1" = 50' Rev: _____ By: _____

Figure 2

Water Surface Elevation vs. Time



APPENDIX A
TECHNOLOGY LABORATORY, INC.
WATER ANALYSIS REPORT
AND
CHAIN-OF-CUSTODY DOCUMENTATION

TECHNOLOGY LABORATORY, INC.
CENTRE PROFESSIONAL OFFICE PARK

1012 Centre Avenue
 Fort Collins, Colorado 80526
 (970) 490-1414

**VOLATILE ORGANICS
 WATER ANALYSIS REPORT**

SORENSEN ENVIRONMENTAL
 1901 Bear Court
 Fort Collins, Colorado 80525

Sampled: 04/04/02
 Received: 04/05/02
 Analyzed: 04/13/02

Sample ID: M8
 Laboratory ID: 2445-1

Project No.: H008-01-002/S02
 Method: EPA-8260

<u>CAS Number</u>	<u>Compound Analyzed</u>	Concentration ($\mu\text{g/L}$)	<u>CAS Number</u>	<u>Compound Analyzed</u>	Concentration ($\mu\text{g/L}$)
75-01-4	Vinyl chloride	<0.5	106-93-4	1,2-Dibromoethane	<0.5
74-87-3	Chloromethane	<0.5	124-48-1	Dibromochloromethane	<0.5
74-83-9	Bromomethane	<0.5	108-90-7	Chlorobenzene	<0.5
75-00-3	Chloroethane	<0.5	630-20-6	1,1,1,2-Tetrachloroethane	<0.5
75-69-4	Trichlorofluoromethane	<0.5	100-41-4	Ethylbenzene	<0.5
75-35-4	1,1-Dichloroethene	<0.5		Total Xylenes	<0.5
156-60-5	trans-1,2-Dichloroethene	<0.5	100-42-5	Styrene	<0.5
156-59-2	cis-1,2-Dichloroethene	<0.5	75-25-2	Bromoform	<0.5
75-09-2	Methylene chloride	<0.5	79-34-5	1,1,2,2-Tetrachloroethane	<0.5
75-34-3	1,1-Dichloroethane	<0.5	98-82-8	Isopropylbenzene	<0.5
74-97-5	Bromochloromethane	<0.5	108-86-1	Bromobenzene	<0.5
67-66-3	Chloroform	<0.5	95-49-8	2-Chlorotoluene	<0.5
71-55-6	1,1,1-Trichloroethane	<0.5	106-43-4	4-Chlorotoluene	<0.5
56-23-5	Carbon tetrachloride	<0.5	108-67-8	1,3,5-Trimethylbenzene	<0.5
71-43-2	Benzene	<0.5	95-63-6	1,2,4-Trimethylbenzene	<0.5
107-06-2	1,2-Dichloroethane	<0.5	98-06-6	tert-Butylbenzene	<0.5
79-01-6	Trichloroethene	<0.5	135-98-8	sec-Butylbenzene	<0.5
78-87-5	1,2-Dichloropropane	<0.5	106-46-7	1,4-Dichlorobenzene	<0.5
75-27-4	Bromodichloromethane	<0.5	541-73-1	1,3-Dichlorobenzene	<0.5
74-95-3	Dibromomethane	<0.5	99-87-6	4-Isopropyltoluene	<0.5
108-88-3	Toluene	<0.5	104-51-8	n-Butylbenzene	<0.5
79-00-5	1,1,2-Trichloroethane	<0.5	87-61-6	1,2,3-Trichlorobenzene	<0.5
142-28-9	1,3-Dichloropropane	<0.5	120-82-1	1,2,4-Trichlorobenzene	<0.5
594-20-7	2,2-Dichloropropane	<0.5	87-68-3	Hexachlorobutadiene	<0.5
563-58-6	1,1-Dichloropropene	<0.5	91-20-3	Naphthalene	<0.5
542-75-6	cis-1,3-Dichloropropene	<0.5	95-50-1	1,2-Dichlorobenzene	<0.5
542-75-6	trans-1,3-Dichloropropene	<0.5	103-65-1	N-Propylbenzene	<0.5
127-18-4	Tetrachloroethene	<0.5			

QA/QC SURROGATE RECOVERIES

<u>Compound</u>	<u>% Recovery</u>	<u>% Rec. Limits</u>
Dibromofluoromethane	95	86-118
Toluene-d ₈	105	88-110
4-Bromofluorobenzene	97	86-115



TECHNOLOGY LABORATORY, INC.

TECHNOLOGY LABORATORY, INC.

CENTRE PROFESSIONAL OFFICE PARK

1012 Centre Avenue
Fort Collins, Colorado 80526
(970) 490-1414

VOLATILE ORGANICS WATER ANALYSIS REPORT

SORENSEN ENVIRONMENTAL
1901 Bear Court
Fort Collins, Colorado 80525

Sampled: 04/04/02
Received: 04/05/02
Analyzed: 04/13/02

Sample ID: M6
Laboratory ID: 2445-2

Project No.: H008-01-002/S02
Method: EPA-8260

<u>CAS Number</u>	<u>Compound Analyzed</u>	Concentration ($\mu\text{g/L}$)	<u>CAS Number</u>	<u>Compound Analyzed</u>	Concentration ($\mu\text{g/L}$)
75-01-4	Vinyl chloride	<0.5	106-93-4	1,2-Dibromoethane	<0.5
74-87-3	Chloromethane	<0.5	124-48-1	Dibromochloromethane	<0.5
74-83-9	Bromomethane	<0.5	108-90-7	Chlorobenzene	<0.5
75-00-3	Chloroethane	<0.5	630-20-6	1,1,1,2-Tetrachloroethane	<0.5
75-69-4	Trichlorofluoromethane	<0.5	100-41-4	Ethylbenzene	<0.5
75-35-4	1,1-Dichloroethene	<0.5		Total Xylenes	<0.5
156-60-5	trans-1,2-Dichloroethene	<0.5	100-42-5	Styrene	<0.5
156-59-2	cis-1,2-Dichloroethene	<0.5	75-25-2	Bromoform	<0.5
75-09-2	Methylene chloride	<0.5	79-34-5	1,1,2,2-Tetrachloroethane	<0.5
75-34-3	1,1-Dichloroethane	<0.5	98-82-8	Isopropylbenzene	<0.5
74-97-5	Bromochloromethane	<0.5	108-86-1	Bromobenzene	<0.5
67-66-3	Chloroform	<0.5	95-49-8	2-Chlorotoluene	<0.5
71-55-6	1,1,1-Trichloroethane	<0.5	106-43-4	4-Chlorotoluene	<0.5
56-23-5	Carbon tetrachloride	<0.5	108-67-8	1,3,5-Trimethylbenzene	<0.5
71-43-2	Benzene	<0.5	95-63-6	1,2,4-Trimethylbenzene	<0.5
107-06-2	1,2-Dichloroethane	<0.5	98-06-6	tert-Butylbenzene	<0.5
79-01-6	Trichloroethene	<0.5	135-98-8	sec-Butylbenzene	<0.5
78-87-5	1,2-Dichloropropane	<0.5	106-46-7	1,4-Dichlorobenzene	<0.5
75-27-4	Bromodichloromethane	<0.5	541-73-1	1,3-Dichlorobenzene	<0.5
74-95-3	Dibromomethane	<0.5	99-87-6	4-Isopropyltoluene	<0.5
108-88-3	Toluene	<0.5	104-51-8	n-Butylbenzene	<0.5
79-00-5	1,1,2-Trichloroethane	<0.5	87-61-6	1,2,3-Trichlorobenzene	<0.5
142-28-9	1,3-Dichloropropane	<0.5	120-82-1	1,2,4-Trichlorobenzene	<0.5
594-20-7	2,2-Dichloropropane	<0.5	87-68-3	Hexachlorobutadiene	<0.5
563-58-6	1,1-Dichloropropene	<0.5	91-20-3	Naphthalene	<0.5
542-75-6	cis-1,3-Dichloropropene	<0.5	95-50-1	1,2-Dichlorobenzene	<0.5
542-75-6	trans-1,3-Dichloropropene	<0.5	103-65-1	N-Propylbenzene	<0.5
127-18-4	Tetrachloroethene	<0.5			

QA/QC SURROGATE RECOVERIES

<u>Compound</u>	<u>% Recovery</u>	<u>% Rec. Limits</u>
Dibromofluoromethane	97	86-118
Toluene-d ₈	104	88-110
4-Bromofluorobenzene	98	86-115

TECHNOLOGY LABORATORY, INC.

TECHNOLOGY LABORATORY, INC.
CENTRE PROFESSIONAL OFFICE PARK

1012 Centre Avenue
 Fort Collins, Colorado 80526
 (970) 490-1414

**VOLATILE ORGANICS
 WATER ANALYSIS REPORT**

SORENSEN ENVIRONMENTAL
 1901 Bear Court
 Fort Collins, Colorado 80525

Sampled: 04/04/02
 Received: 04/05/02
 Analyzed: 04/13/02

Sample ID: M3
 Laboratory ID: 2445-3

Project No.: H008-01-002/S02
 Method: EPA-8260

<u>CAS Number</u>	<u>Compound Analyzed</u>	Concentration ($\mu\text{g/L}$)	<u>CAS Number</u>	<u>Compound Analyzed</u>	Concentration ($\mu\text{g/L}$)
75-01-4	Vinyl chloride	<0.5	106-93-4	1,2-Dibromoethane	<0.5
74-87-3	Chloromethane	<0.5	124-48-1	Dibromochloromethane	<0.5
74-83-9	Bromomethane	<0.5	108-90-7	Chlorobenzene	<0.5
75-00-3	Chloroethane	<0.5	630-20-6	1,1,1,2-Tetrachloroethane	<0.5
75-69-4	Trichlorofluoromethane	<0.5	100-41-4	Ethylbenzene	<0.5
75-35-4	1,1-Dichloroethene	<0.5		Total Xylenes	<0.5
156-60-5	trans-1,2-Dichloroethene	<0.5	100-42-5	Styrene	<0.5
156-59-2	cis-1,2-Dichloroethene	<0.5	75-25-2	Bromoform	<0.5
75-09-2	Methylene chloride	<0.5	79-34-5	1,1,2,2-Tetrachloroethane	<0.5
75-34-3	1,1-Dichloroethane	<0.5	98-82-8	Isopropylbenzene	<0.5
74-97-5	Bromochloromethane	<0.5	108-86-1	Bromobenzene	<0.5
67-66-3	Chloroform	<0.5	95-49-8	2-Chlorotoluene	<0.5
71-55-6	1,1,1-Trichloroethane	<0.5	106-43-4	4-Chlorotoluene	<0.5
56-23-5	Carbon tetrachloride	<0.5	108-67-8	1,3,5-Trimethylbenzene	<0.5
71-43-2	Benzene	<0.5	95-63-6	1,2,4-Trimethylbenzene	<0.5
107-06-2	1,2-Dichloroethane	<0.5	98-06-6	tert-Butylbenzene	<0.5
79-01-6	Trichloroethene	<0.5	135-98-8	sec-Butylbenzene	<0.5
78-87-5	1,2-Dichloropropane	<0.5	106-46-7	1,4-Dichlorobenzene	<0.5
75-27-4	Bromodichloromethane	<0.5	541-73-1	1,3-Dichlorobenzene	<0.5
74-95-3	Dibromomethane	<0.5	99-87-6	4-Isopropyltoluene	<0.5
108-88-3	Toluene	<0.5	104-51-8	n-Butylbenzene	<0.5
79-00-5	1,1,2-Trichloroethane	<0.5	87-61-6	1,2,3-Trichlorobenzene	<0.5
142-28-9	1,3-Dichloropropane	<0.5	120-82-1	1,2,4-Trichlorobenzene	<0.5
594-20-7	2,2-Dichloropropane	<0.5	87-68-3	Hexachlorobutadiene	<0.5
563-58-6	1,1-Dichloropropene	<0.5	91-20-3	Naphthalene	<0.5
542-75-6	cis-1,3-Dichloropropene	<0.5	95-50-1	1,2-Dichlorobenzene	<0.5
542-75-6	trans-1,3-Dichloropropene	<0.5	103-65-1	N-Propylbenzene	<0.5
127-18-4	Tetrachloroethene	<0.5			

QA/QC SURROGATE RECOVERIES

<u>Compound</u>	<u>% Recovery</u>	<u>% Rec. Limits</u>
Dibromofluoromethane	96	86-118
Toluene-d ₈	103	88-110
4-Bromofluorobenzene	94	86-115

TECHNOLOGY LABORATORY, INC.

TECHNOLOGY LABORATORY, INC.

CENTRE PROFESSIONAL OFFICE PARK

1012 Centre Avenue
Fort Collins, Colorado 80526
(970) 490-1414

VOLATILE ORGANICS WATER ANALYSIS REPORT

SORENSEN ENVIRONMENTAL
1901 Bear Court
Fort Collins, Colorado 80525

Sampled: 04/04/02
Received: 04/05/02
Analyzed: 04/13/02

Sample ID: M7
Laboratory ID: 2445-4

Project No.: H008-01-002/S02
Method: EPA-8260

CAS Number	Compound Analyzed	Concentration ($\mu\text{g/L}$)	CAS Number	Compound Analyzed	Concentration ($\mu\text{g/L}$)
75-01-4	Vinyl chloride	<0.5	106-93-4	1,2-Dibromoethane	<0.5
74-87-3	Chloromethane	<0.5	124-48-1	Dibromochloromethane	<0.5
74-83-9	Bromomethane	<0.5	108-90-7	Chlorobenzene	<0.5
75-00-3	Chloroethane	<0.5	630-20-6	1,1,1,2-Tetrachloroethane	<0.5
75-69-4	Trichlorofluoromethane	<0.5	100-41-4	Ethylbenzene	<0.5
75-35-4	1,1-Dichloroethene	<0.5		Total Xylenes	<0.5
156-60-5	trans-1,2-Dichloroethene	<0.5	100-42-5	Styrene	<0.5
156-59-2	cis-1,2-Dichloroethene	<0.5	75-25-2	Bromoform	<0.5
75-09-2	Methylene chloride	<0.5	79-34-5	1,1,2,2-Tetrachloroethane	<0.5
75-34-3	1,1-Dichloroethane	<0.5	98-82-8	Isopropylbenzene	<0.5
74-97-5	Bromochloromethane	<0.5	108-86-1	Bromobenzene	<0.5
67-66-3	Chloroform	<0.5	95-49-8	2-Chlorotoluene	<0.5
71-55-6	1,1,1-Trichloroethane	<0.5	106-43-4	4-Chlorotoluene	<0.5
56-23-5	Carbon tetrachloride	<0.5	108-67-8	1,3,5-Trimethylbenzene	<0.5
71-43-2	Benzene	<0.5	95-63-6	1,2,4-Trimethylbenzene	<0.5
107-06-2	1,2-Dichloroethane	<0.5	98-06-6	tert-Butylbenzene	<0.5
79-01-6	Trichloroethene	<0.5	135-98-8	sec-Butylbenzene	<0.5
78-87-5	1,2-Dichloropropane	<0.5	106-46-7	1,4-Dichlorobenzene	<0.5
75-27-4	Bromodichloromethane	<0.5	541-73-1	1,3-Dichlorobenzene	<0.5
74-95-3	Dibromomethane	<0.5	99-87-6	4-Isopropyltoluene	<0.5
108-88-3	Toluene	<0.5	104-51-8	n-Butylbenzene	<0.5
79-00-5	1,1,2-Trichloroethane	<0.5	87-61-6	1,2,3-Trichlorobenzene	<0.5
142-28-9	1,3-Dichloropropane	<0.5	120-82-1	1,2,4-Trichlorobenzene	<0.5
594-20-7	2,2-Dichloropropane	<0.5	87-68-3	Hexachlorobutadiene	<0.5
563-58-6	1,1-Dichloropropene	<0.5	91-20-3	Naphthalene	<0.5
542-75-6	cis-1,3-Dichloropropene	<0.5	95-50-1	1,2-Dichlorobenzene	<0.5
542-75-6	trans-1,3-Dichloropropene	<0.5	103-65-1	N-Propylbenzene	<0.5
127-18-4	Tetrachloroethene	<0.5			

QA/QC SURROGATE RECOVERIES

Compound	% Recovery	% Rec. Limits
Dibromofluoromethane	96	86-118
Toluene-d ₈	104	88-110
4-Bromofluorobenzene	96	86-115



TECHNOLOGY LABORATORY, INC.

TECHNOLOGY LABORATORY, INC.

CENTRE PROFESSIONAL OFFICE PARK

1012 Centre Avenue
Fort Collins, Colorado 80526
(970) 490-1414

VOLATILE ORGANICS WATER ANALYSIS REPORT

SORENSEN ENVIRONMENTAL
1901 Bear Court
Fort Collins, Colorado 80525

Sampled: 04/04/02
Received: 04/05/02
Analyzed: 04/13/02

Sample ID: M1
Laboratory ID: 2445-5

Project No.: H008-01-002/S02
Method: EPA-8260

<u>CAS Number</u>	<u>Compound Analyzed</u>	Concentration ($\mu\text{g/L}$)	<u>CAS Number</u>	<u>Compound Analyzed</u>	Concentration ($\mu\text{g/L}$)
75-01-4	Vinyl chloride	<0.5	106-93-4	1,2-Dibromoethane	<0.5
74-87-3	Chloromethane	<0.5	124-48-1	Dibromochloromethane	<0.5
74-83-9	Bromomethane	<0.5	108-90-7	Chlorobenzene	<0.5
75-00-3	Chloroethane	<0.5	630-20-6	1,1,1,2-Tetrachloroethane	<0.5
75-69-4	Trichlorofluoromethane	<0.5	100-41-4	Ethylbenzene	<0.5
75-35-4	1,1-Dichloroethene	<0.5		Total Xylenes	<0.5
156-60-5	trans-1,2-Dichloroethene	<0.5	100-42-5	Styrene	<0.5
156-59-2	cis-1,2-Dichloroethene	<0.5	75-25-2	Bromoform	<0.5
75-09-2	Methylene chloride	<0.5	79-34-5	1,1,2,2-Tetrachloroethane	<0.5
75-34-3	1,1-Dichloroethane	<0.5	98-82-8	Isopropylbenzene	<0.5
74-97-5	Bromochloromethane	<0.5	108-86-1	Bromobenzene	<0.5
67-66-3	Chloroform	<0.5	95-49-8	2-Chlorotoluene	<0.5
71-55-6	1,1,1-Trichloroethane	<0.5	106-43-4	4-Chlorotoluene	<0.5
56-23-5	Carbon tetrachloride	<0.5	108-67-8	1,3,5-Trimethylbenzene	<0.5
71-43-2	Benzene	<0.5	95-63-6	1,2,4-Trimethylbenzene	<0.5
107-06-2	1,2-Dichloroethane	<0.5	98-06-6	tert-Butylbenzene	<0.5
79-01-6	Trichloroethene	<0.5	135-98-8	sec-Butylbenzene	<0.5
78-87-5	1,2-Dichloropropane	<0.5	106-46-7	1,4-Dichlorobenzene	<0.5
75-27-4	Bromodichloromethane	<0.5	541-73-1	1,3-Dichlorobenzene	<0.5
74-95-3	Dibromomethane	<0.5	99-87-6	4-Isopropyltoluene	<0.5
108-88-3	Toluene	<0.5	104-51-8	n-Butylbenzene	<0.5
79-00-5	1,1,2-Trichloroethane	<0.5	87-61-6	1,2,3-Trichlorobenzene	<0.5
142-28-9	1,3-Dichloropropane	<0.5	120-82-1	1,2,4-Trichlorobenzene	<0.5
594-20-7	2,2-Dichloropropane	<0.5	87-68-3	Hexachlorobutadiene	<0.5
563-58-6	1,1-Dichloropropene	<0.5	91-20-3	Naphthalene	<0.5
542-75-6	cis-1,3-Dichloropropene	<0.5	95-50-1	1,2-Dichlorobenzene	<0.5
542-75-6	trans-1,3-Dichloropropene	<0.5	103-65-1	N-Propylbenzene	<0.5
127-18-4	Tetrachloroethene	<0.5			

QA/QC SURROGATE RECOVERIES

<u>Compound</u>	<u>% Recovery</u>	<u>% Rec. Limits</u>
Dibromofluoromethane	97	86-118
Toluene-d ₈	104	88-110
4-Bromofluorobenzene	96	86-115



TECHNOLOGY LABORATORY, INC.

TECHNOLOGY LABORATORY, INC.

CENTRE PROFESSIONAL OFFICE PARK

1012 Centre Avenue
Fort Collins, Colorado 80526
(970) 490-1414

VOLATILE ORGANICS WATER ANALYSIS REPORT

SORENSEN ENVIRONMENTAL
1901 Bear Court
Fort Collins, Colorado 80525

Sampled: 04/04/02
Received: 04/05/02
Analyzed: 04/13/02

Sample ID: M4
Laboratory ID: 2445-7

Project No.: H008-01-002/S02
Method: EPA-8260

<u>CAS Number</u>	<u>Compound Analyzed</u>	Concentration ($\mu\text{g/L}$)	<u>CAS Number</u>	<u>Compound Analyzed</u>	Concentration ($\mu\text{g/L}$)
75-01-4	Vinyl chloride	<0.5	106-93-4	1,2-Dibromoethane	<0.5
74-87-3	Chloromethane	<0.5	124-48-1	Dibromochloromethane	<0.5
74-83-9	Bromomethane	<0.5	108-90-7	Chlorobenzene	<0.5
75-00-3	Chloroethane	<0.5	630-20-6	1,1,1,2-Tetrachloroethane	<0.5
75-69-4	Trichlorofluoromethane	<0.5	100-41-4	Ethylbenzene	<0.5
75-35-4	1,1-Dichloroethene	<0.5		Total Xylenes	<0.5
156-60-5	trans-1,2-Dichloroethene	<0.5	100-42-5	Styrene	<0.5
156-59-2	cis-1,2-Dichloroethene	<0.5	75-25-2	Bromoform	<0.5
75-09-2	Methylene chloride	<0.5	79-34-5	1,1,2,2-Tetrachloroethane	<0.5
75-34-3	1,1-Dichloroethane	<0.5	98-82-8	Isopropylbenzene	<0.5
74-97-5	Bromochloromethane	<0.5	108-86-1	Bromobenzene	<0.5
67-66-3	Chloroform	<0.5	95-49-8	2-Chlorotoluene	<0.5
71-55-6	1,1,1-Trichloroethane	<0.5	106-43-4	4-Chlorotoluene	<0.5
56-23-5	Carbon tetrachloride	<0.5	108-67-8	1,3,5-Trimethylbenzene	<0.5
71-43-2	Benzene	<0.5	95-63-6	1,2,4-Trimethylbenzene	<0.5
107-06-2	1,2-Dichloroethane	<0.5	98-06-6	tert-Butylbenzene	<0.5
79-01-6	Trichloroethene	<0.5	135-98-8	sec-Butylbenzene	<0.5
78-87-5	1,2-Dichloropropane	<0.5	106-46-7	1,4-Dichlorobenzene	<0.5
75-27-4	Bromodichloromethane	<0.5	541-73-1	1,3-Dichlorobenzene	<0.5
74-95-3	Dibromomethane	<0.5	99-87-6	4-Isopropyltoluene	<0.5
108-88-3	Toluene	<0.5	104-51-8	n-Butylbenzene	<0.5
79-00-5	1,1,2-Trichloroethane	<0.5	87-61-6	1,2,3-Trichlorobenzene	<0.5
142-28-9	1,3-Dichloropropane	<0.5	120-82-1	1,2,4-Trichlorobenzene	<0.5
594-20-7	2,2-Dichloropropane	<0.5	87-68-3	Hexachlorobutadiene	<0.5
563-58-6	1,1-Dichloropropene	<0.5	91-20-3	Naphthalene	<0.5
542-75-6	cis-1,3-Dichloropropene	<0.5	95-50-1	1,2-Dichlorobenzene	<0.5
542-75-6	trans-1,3-Dichloropropene	<0.5	103-65-1	N-Propylbenzene	<0.5
127-18-4	Tetrachloroethene	<0.5			

QA/QC SURROGATE RECOVERIES

<u>Compound</u>	<u>% Recovery</u>	<u>% Rec. Limits</u>
Dibromofluoromethane	95	86-118
Toluene-d ₈	105	88-110
4-Bromofluorobenzene	97	86-115

TECHNOLOGY LABORATORY, INC.

CENTRE PROFESSIONAL OFFICE PARK

1012 Centre Avenue
Fort Collins, Colorado 80526
(970) 490-1414

TRACE METALS Water ANALYSIS REPORT

SORENSEN ENVIRONMENTAL
1901 Bear Court
Fort Collins, Colorado 80525

Date Received: 04/05/02
Date Analyzed: 04/13/02
Project No.: H008-01-002/S02

<u>Lab ID</u>	<u>Sample ID</u>	<u>Date Sampled</u>	Total Silver <u>mg/L</u>	Total Cadmium <u>mg/L</u>	Total Lead <u>mg/L</u>
2445-1	M8	04/04/02	<0.01	<0.005	<0.003
2445-2	M6	04/04/02	<0.01	<0.005	<0.003
2445-3	M3	04/04/02	<0.01	<0.005	<0.003
2445-4	M7	04/04/02	<0.01	<0.005	<0.003
2445-5	M1	04/04/02	<0.01	<0.005	<0.003
2445-7	M4	04/04/02	<0.01	<0.005	<0.003
2445-8	M4-d	04/04/02	<0.01	<0.005	<0.003
2445-9	Trip Blank	04/04/02	<0.01	<0.005	<0.003

Total Lead Method: EPA-6010B
Total Silver Method: EPA-7760
Total Cadmium Method: EPA-7130


TECHNOLOGY LABORATORY, INC.

TECHNOLOGY LABORATORY, INC.

CENTRE PROFESSIONAL OFFICE PARK

1012 Centre Avenue
Fort Collins, Colorado 80526
(970) 490-1414

WATER ANALYSIS REPORT

SORENSEN ENVIRONMENTAL
1901 Bear Court
Fort Collins, Colorado 80525

Sampled: 04/04/02
Received: 04/05/02
Analyzed: 04/13/02

Sample ID: M1-d

Project No.: H008-01-002/S02

Laboratory ID: 2445-6

<u>Compound Analyzed</u>	<u>Concentration</u>	<u>Method</u>
pH	6.91 units	EPA-150.1
Conductivity	1.662 mS/cm	EPA-120.1



TECHNOLOGY LABORATORY, INC.



TECHNOLOGY LABORATORY, INC.
1012 CENTRE AVENUE
FORT COLLINS, CO 80526
(970) 490-1414

W.O. NUMBER _____

CHAIN-OF-CUSTODY REPORT

COMPANY NAME	PROJECT MANAGER	PROJECT NUMBER	PROJECT LOCATION OR NAME	SAMPLE MATRIX: SOIL (S) AQUEOUS (W)	AIR (A) OTHER (O)	NUMBER OF CONTAINERS	ANALYSIS REQUESTED								OTHER							
							BTEX, TVPH (GRO)	MTBE	TEPH (DRO)	PAH	TRPH (4:18:1)	OIL & GREASE	VOC 8260	SEMI-VOC 8270	PCB / PESTICIDE	pH, TSS	TOTAL RCRA 8 Metals	TCLP RCRA 8 Metals	LEAD	PAINT FILTER	REACTIVITY / IGNIT. / CORR.	
1 M8		4/4/02 08:48W	3							X												
2 M6		" 09:37 W	3							X												
3 M3		" 11:44 W	3							X												
4 M7		" 13:10 W	3							X												
5 M1		" 14:00 W	3							X												
6 M1-d		" 14:00 W	3																			
7 M4		" 14:35 W	3									X										
8 M4-d		" 14:35 W	1																			
9 Trip Blank		" 14:36 W	1																			

PAGE 1 OF 1

GENERAL COMMENTS

METHOD/DET.LIMIT : VOC - 8260/0.5 µg/L ; TPb - 7420/0.003 mg/L ;
TAg - 7760/0.01 mg/L ; TCd - 7130/0.005 mg/L

TURNAROUND TIME

NORMAL (5-10 days)

RUSH (24 hr)

OTHER

RELINQUISHED BY:

COMPANY:

RELINQUISHED BY:

COMPANY:

DATE: 4/5/02

TIME: 9:45

DATE:

TIME:

RECEIVED BY:

COMPANY:

RECEIVED BY:

COMPANY: